a source of optical pump radiation for directing optical pump radiation into said plurality of laser gain medium elements;

wherein said channels are maintained at a pressure such that a pressure differential is created between said front surface and said back surface of each said laser gain medium element to thereby maintain each said laser gain medium element secured against said front surface of said substrate;

wherein each of said plurality of laser gain medium elements are placed closely adjacent one another such that a peripheral edge of each is positioned closely adjacent a peripheral edge of another one of said laser gain medium elements; and

wherein at least one of said laser gain medium elements has an optical coating on said back surface thereof to provide high reflectivity at a lasing wavelength of said laser gain medium elements;

A² cont.

wherein at least one of said laser gain medium elements has an optical coating on said front surface thereof, said coating being antireflective at a lasing wavelength of said laser gain medium element; and

wherein said substrate is cooled.

2. (Amended) The laser module of Claim 1, further comprising a cooling medium flowing through said channels for cooling said laser gain medium elements.

3. (Amended) The laser module of Claim 1 wherein each said laser gain medium elements comprises a host lattice and an undoped optical medium and wherein said host lattice and said undoped optical medium are selected from a group consisting of: yttrium aluminum garnet, gadolinium gallium garnet, gadolinium scandium gallium garnet, lithium yttrium fluoride, yttrium vanadate, phosphate glass, silicate glass and sapphire.

Q2 Cont

4. (Amended) The laser module of Claim 3 wherein said host lattice is doped with a material selected from a group of: Ti, Cu, Co, Ni, Cr, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm and Yb.

11. (Amended) The laser module of Claim 1 further including an undoped optical medium attached to said peripheral edge of said laser gain medium elements;

wherein said optical pump radiation is directed into said undoped optical medium, said undoped optical medium transporting said optical pump radiation into an associated one of said laser gain media elements; and

Q3

wherein said undoped optical medium is secured to said peripheral edge via a bond which is transparent at a wavelength of said optical pump radiation and a lasing wavelength of said laser gain media.

14. (Amended) A solid-state laser module comprising:

Q4

(a) a rigid substrate having a plurality of internal passages forming channels within a support surface of said rigid substrate, said passages leading up to the surface

of said substrate and being maintained at a substantially lower pressure than an atmosphere in which said laser module is immersed;

(b) a plurality of laser gain medium elements disposed closely adjacent one another and against said support surface, each of said laser gain medium elements effectively having a pair of surfaces having a first dimension, said pair of surfaces further being opposite to each other and being separated by a peripheral edge surface, each of said laser gain medium elements having a thickness representing a second dimension which is substantially smaller than said first dimension;

a4 cont.

i) a first one of said pair of surfaces including an anti-reflection coating which is substantially transmissive of radiation at a wavelength at which laser gain is produced therein;

ii) said second one of said pair of surfaces including a coating which is substantially reflective of radiation at a laser gain wavelength;

iii) said second one of said pair of surfaces being disposed against said support surface of said substrate and maintained so by a pressure differential between pressure in said passages and said atmosphere in which said laser module is immersed; and

at least one source of optical pump radiation directing optical pump radiation into at least one of said laser gain medium elements.

19. (Amended) The laser module of Claim 14, wherein said at least one is arranged for directing optical pump radiation into at least one of said peripheral edge of at least one of said laser gain medium elements.

a5

20. (Amended) The laser module of Claim 19 further comprising at least one tapered optical duct disposed between said at least one source of optical pump radiation and said peripheral edge, said tapered optical duct concentrating said optical pump radiation into said peripheral edge of said at least one laser gain medium element.

25. (Amended) The laser module of Claim 19 further comprising at least one lensing element disposed between said at least one source of optical pump radiation and said peripheral edge, said lensing element concentrating said optical pump radiation into said peripheral edge of said laser gain medium.

26. (Amended) A solid-state laser module comprising:

a) a cooled rigid substrate;

b) a plurality of laser gain medium elements disposed adjacent to one another and against a support surface, each of said laser gain medium elements effectively having a pair of surfaces having a first dimension, said pair of surfaces further being opposite to each other and being separated by a peripheral edge surface, each of said laser gain medium elements having a thickness representing a second dimension which is substantially smaller than said first dimension;

i) a first one of said pair of surfaces including an anti-reflection coating which is substantially transmissive of radiation at a wavelength at which laser gain is produced therein;

ii) said second one of said pair of surfaces including a coating which is substantially reflective of radiation at a laser gain wavelength;

iii) said second one of said pair of surfaces being attached to said support surface of said substrate and maintained so by a bonded joint; and

at least one source of optical pump radiation directing optical pump radiation into at least one of said laser gain medium elements.

31. (Amended) The laser module of claim 26, wherein said at least one source is arranged for directing optical pump radiation into at least one of said peripheral edge of at least one of said laser gain medium elements.